

RBE(H) Motor Series

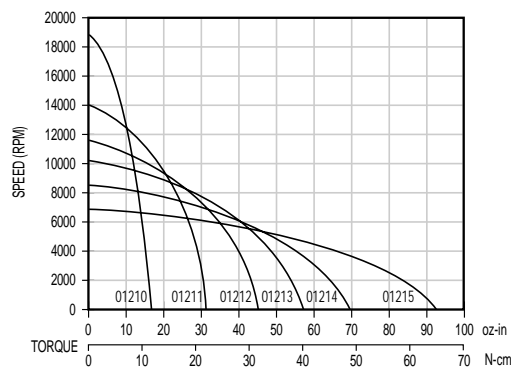
RBE(H) 01210 MOTOR SERIES PERFORMANCE DATA

| Motor Parameters | Symbols | Units | 01210 | 01211 | 01212 | 01213 | 01214 | 01215 |
|---|----------------|------------------------|----------|----------|----------|----------|----------|----------|
| Max Cont. Output Power at 25°C amb. | HP Rated | HP | 0.142 | 0.204 | 0.243 | 0.272 | 0.290 | 0.310 |
| | P Rated | Watts | 106 | 152 | 181 | 203 | 216 | 231 |
| Speed at Rated Power | N Rated | RPM | 13800 | 9680 | 8100 | 7152 | 6230 | 5100 |
| Max Mechanical Speed | N Max | RPM | 18000 | 18000 | 18000 | 18000 | 18000 | 18000 |
| Continuous Stall Torque at 25°C amb. | Tc | oz-in | 16.4 | 31.6 | 43.5 | 54.8 | 66.2 | 90.4 |
| | | N-m | 0.115 | 0.223 | 0.307 | 0.387 | 0.467 | 0.639 |
| Peak Torque | Tp | oz-in | 48.4 | 114 | 168 | 222 | 282 | 435 |
| | | N-m | 0.342 | 0.806 | 1.18 | 1.57 | 1.99 | 3.07 |
| Max Torque for Linear KT | Tsl | oz-in | 48.4 | 114 | 168 | 222 | 282 | 435 |
| | | N-m | 0.342 | 0.806 | 1.18 | 1.57 | 1.99 | 3.07 |
| Motor Constant | Tm | oz-in/ \sqrt{W} | 4.00 | 7.12 | 9.50 | 11.7 | 13.9 | 18.4 |
| | | N-m/ \sqrt{W} | 0.028 | 0.050 | 0.067 | 0.083 | 0.098 | 0.130 |
| Thermal Resistance* | Rth | °C/Watt | 4.25 | 3.86 | 3.68 | 3.55 | 3.44 | 3.27 |
| Viscous Damping | Fi | oz-in/RPM | 1.30E-04 | 2.96E-04 | 4.46E-04 | 5.97E-04 | 7.78E-04 | 1.20E-03 |
| | | N-m/RPM | 9.18E-07 | 2.09E-06 | 3.15E-06 | 4.22E-06 | 5.49E-06 | 8.48E-06 |
| Max Static Friction | Tf | oz-in | 1.70 | 2.13 | 2.53 | 2.92 | 3.40 | 4.50 |
| | | N-m | 0.0120 | 0.015 | 0.018 | 0.021 | 0.024 | 0.032 |
| Max Cogging Torque Peak to Peak | Tcog | oz-in | 0.41 | 0.66 | 0.88 | 1.10 | 1.37 | 2.00 |
| | | N-m | 0.0029 | 0.0046 | 0.0062 | 0.0078 | 0.0097 | 0.014 |
| Frameless Motor | Inertia Jmf | oz-in-sec ² | 7.30E-04 | 1.20E-03 | 1.70E-03 | 2.10E-03 | 2.70E-03 | 4.00E-03 |
| | | Kg-m ² | 5.15E-06 | 8.47E-06 | 1.20E-05 | 1.48E-05 | 1.91E-05 | 2.82E-05 |
| Housed Motor | Weight Wtf | oz | 4.5 | 7.2 | 9.6 | 12.1 | 15.1 | 22.0 |
| | | Kg | 1.26E-01 | 2.03E-01 | 2.74E-01 | 3.44E-01 | 4.28E-01 | 6.24E-01 |
| Housed Motor | Inertia Jmh | oz-in-sec ² | 7.60E-04 | 1.30E-03 | 1.80E-03 | 2.20E-03 | 2.80E-03 | 4.20E-03 |
| | | Kg-m ² | 5.37E-06 | 9.18E-06 | 1.27E-05 | 1.55E-05 | 1.98E-05 | 2.97E-05 |
| Housed Motor | Weight Wth | oz | 11.3 | 14.2 | 16.8 | 19.5 | 22.6 | 30.0 |
| | | Kg | 3.20E-01 | 4.02E-01 | 4.77E-01 | 5.52E-01 | 6.41E-01 | 8.50E-01 |
| No. of poles | P | | 8 | 8 | 8 | 8 | 8 | 8 |

| Winding Constants | Symbols | Units | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C | A | B | C |
|-------------------------|---------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|--------|--------|-------|--------|-------|-------|--------|
| Current at Cont. Torque | Ic | Amps | 5.41 | 3.89 | 6.95 | 5.81 | 3.63 | 9.06 | 5.42 | 3.38 | 8.45 | 5.77 | 4.00 | 8.88 | 6.15 | 3.73 | 8.61 | 5.46 | 3.31 | 7.64 |
| Current at Peak Torque | Ip | Amps | 15.0 | 10.6 | 18.9 | 20.0 | 10.6 | 26.8 | 20.0 | 10.6 | 26.8 | 22.5 | 13.4 | 30.1 | 25.3 | 13.4 | 35.8 | 25.3 | 13.4 | 35.8 |
| Torque Sensitivity | Kt | oz-in/Amp | 3.34 | 4.64 | 2.60 | 5.80 | 9.30 | 3.72 | 8.49 | 13.6 | 5.45 | 10.0 | 14.5 | 6.50 | 11.3 | 18.7 | 8.08 | 17.4 | 28.7 | 12.4 |
| | | N-m/Amp | 0.0236 | 0.0328 | 0.0183 | 0.0410 | 0.0657 | 0.0263 | 0.0600 | 0.0962 | 0.0385 | 0.0707 | 0.102 | 0.0459 | 0.0799 | 0.132 | 0.0571 | 0.123 | 0.203 | 0.0878 |
| Back EMF constant | Kb | V/KRPM | 2.47 | 3.43 | 1.92 | 4.29 | 6.88 | 2.75 | 6.28 | 10.1 | 4.03 | 7.41 | 10.7 | 4.81 | 8.36 | 13.8 | 5.97 | 12.9 | 21.2 | 9.19 |
| Motor Resistance | Rm | Ohms | 0.698 | 1.38 | 0.431 | 0.664 | 1.75 | 0.276 | 0.803 | 2.11 | 0.334 | 0.733 | 1.55 | 0.307 | 0.666 | 1.82 | 0.336 | 0.890 | 2.43 | 0.450 |
| Motor Inductance | Lm | mH | 0.280 | 0.54 | 0.17 | 0.32 | 0.83 | 0.13 | 0.44 | 1.1 | 0.18 | 0.47 | 0.97 | 0.20 | 0.48 | 1.3 | 0.25 | 0.71 | 1.9 | 0.36 |

*Rth assumes a housed motor mounted to a 4.0" x 3.75" x 0.25" aluminum heatsink or equivalent

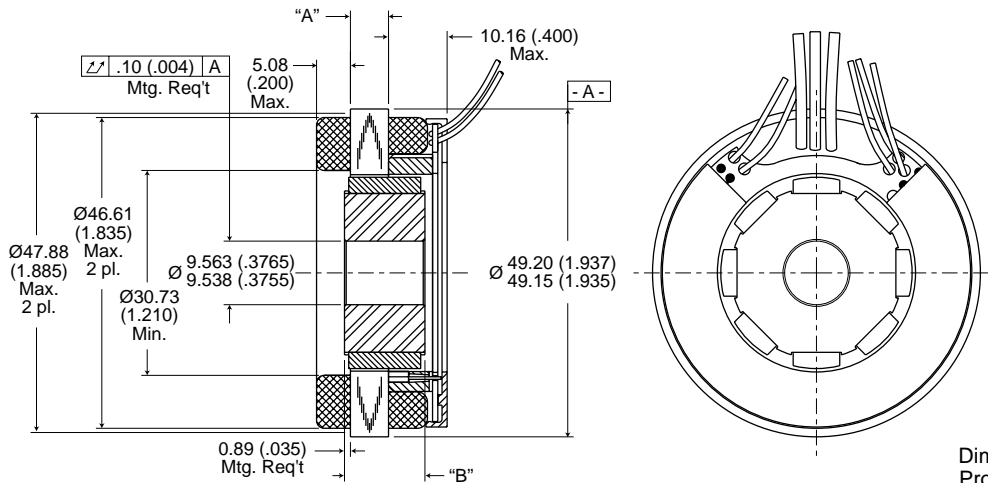
Continuous Duty Capability for 130°C Rise — RBE - 01210 Series



RBE(H) Motor Series

DIMENSIONS

RBE-0121X-X00



Dimensions in mm (inches).
Product designed in inches.
Metric conversions provided for reference only.

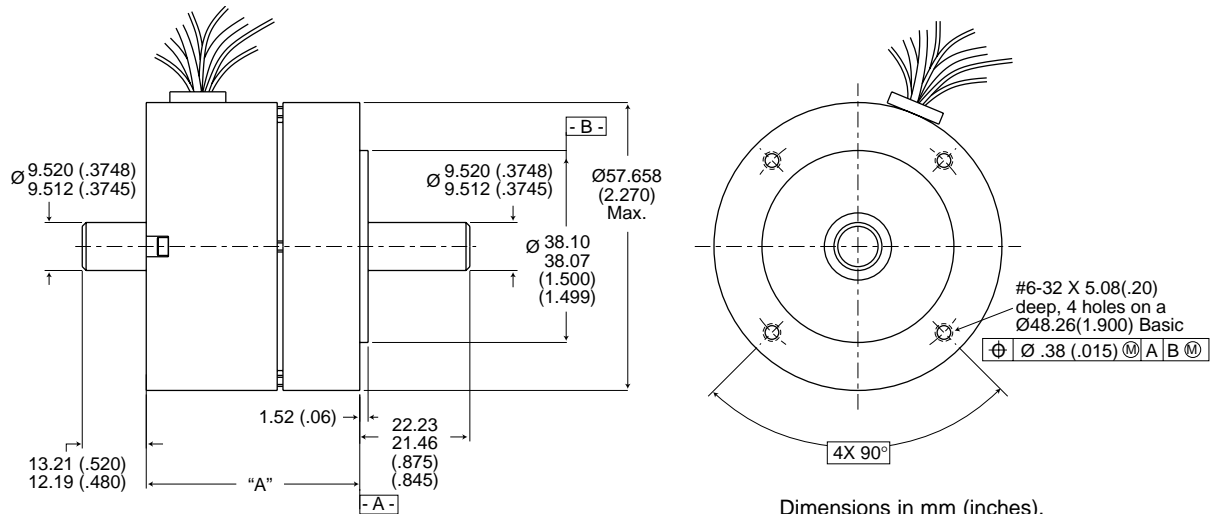
Notes:

- 1) For a C.W. rotation, as viewed from lead end, energize per excitation sequence table.
- 2) V-AB, V-BC and V-CA is back EMF of motor phases AB, BC and CA respectively, aligned with sensor output as shown for C.W. rotation only.
- 3) Mounting surface is between Ø 47.88 (1.885) and Ø 49.17 (1.936) on both sides.

| MODEL NUMBER | RBE-01210 | RBE-01211 | RBE-01212 | RBE-01213 | RBE-01214 | RBE-01215 |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| "A" Dimension | 5.72 (0.225) | 12.7 (0.500) | 19.05 (0.750) | 25.4 (1.000) | 33.02 (1.300) | 50.8 (2.000) |
| "B" Dimension | 12.07 (0.475) | 19.05 (0.750) | 25.4 (1.000) | 31.75 (1.250) | 39.37 (1.550) | 57.15 (2.250) |

Tolerance $\pm .010$ on "A" Dimension.

RBEH-0121X-X00



Dimensions in mm (inches).
Product designed in inches.
Metric conversions provided for reference only.

Notes:

- 1) Shaft end play: with a 9 lb reversing load, the axial displacement shall be .013-.15 (.0005-.006).
- 2) For a C.C.W. rotation, as viewed from pilot end, energize per excitation sequence table.
- 3) V-AB, V-BC and V-CA is back EMF of motor phases AB, BC and CA respectively, aligned with sensor output as shown for C.C.W. rotation only.

| MODEL NUMBER | RBEH-01210 | RBEH-01211 | RBEH-01212 | RBEH-01213 | RBEH-01214 | RBEH-01215 |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| "A" Dimension | 43.05 (1.695) | 50.04 (1.970) | 56.39 (2.220) | 62.74 (2.470) | 70.36 (2.770) | 88.14 (3.470) |

RBE/RBEH LEADWIRE

Motor Leads: #20 AWG Teflon coated per MIL-W-22759/11, 3 leads, 152 (6.00) min lg. ea. 1-black, 1-red, 1-white.

Sensor Leads: #26 AWG type "ET" Teflon coated per MIL-W-16878, 5 leads, 152 (6.00) min lg. ea. 1-blue, 1-brown, 1-green, 1-orange, 1-yellow.